

Evaluation of cross-laminated timber (CLT) resistance to termite attack

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Abstract

Cross laminated timber panels (CLT) are a new generation of mass timber products that provide solutions to the mid- and high-rise wood building market. CLT products have been successfully used for construction in Europe for decades, and in the past few years, manufacturers have expanded the use of this product into the North American market. However, differences in the conditions to which the material will be exposed has yet to be fully investigated. One such condition is potential infestation by native and invasive termites. No termite infestation experiments have been published for the product, and no standards exist for testing of the CLT and other mass timber products for termite resistance. The objective of this research is evaluation of CLT resistance against subterranean termites in the southeastern United States. For the termite tests untreated CLT blocks made with kiln-dried wood were obtained from material currently available on the market. Results indicate that untreated CLT is susceptible to attack by both *Reticulitermes* spp. and *Coptotermes formosanus*. Moreover, evaluation of amount of damage to the material may be difficult using conventional methods such as mass loss and visual rating, and more technical methods, such as X-ray, acoustic testing, or 3-dimensional scanning technologies may need to be modified to provide a more coherent picture of internal panel damage. Both lab and field tests are continuing.

Statistical Process Control Strategies for Reducing Costs in Manufacturing Treated Wood

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Abstract

This paper outlines a systematic approach for implementing statistical process control (SPC) as a strategy towards reducing the manufacturing costs of treated wood. The systematic approach examines sources of variation that increase cost during the manufacturing process. The philosophy proposed by Ishikawa that segments variation into five types: 1) measurement; 2) methods; 3) people; 4) machines; and 5) materials is exemplified for treated wood. Implementing a sustainable approach for reducing long-term variation of chemical additives using SPC is highlighted. Additional root-cause analytic techniques such as cause-mapping, correlation analysis, and Failure Mode Effects Analysis (FMEA) are discussed. The Taguchi Loss Function is developed for the treated wood manufacturing process as a methodology of estimating costs due to process variation. A “draft” handbook for applying these principles for the industry will be illustrated.

Keywords. – *Treated wood, statistical process control, Ishikawa, FMEA, Taguchi Loss Function*

QC Assessments for Wood Pole Inspection and Treatment Programs

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Abstract

An important consideration of any pole inspection and/or treatment program is the quality of the services provided. Quality control requirements and procedures are a critical component of a successful maintenance program and should be included in the program's specification or scope of work. This presentation will highlight key items to consider when specifying those requirements, along with general information on how to execute an effective quality control inspection for common types of wood pole inspection and treatment programs.